



REPORT OF: FOUNDATION INVESTIGATION  
MUSTANG TRACTOR & EQUIPMENT CO.  
WALLISVILLE ROAD SITE  
HOUSTON, TEXAS

REPORT NO.: 105-74E JANUARY 1974

REPORTED TO: RALPH MILLER  
ARCHITECT  
HOUSTON, TEXAS

958172



### INTRODUCTION

The study reported herein is an investigation of the sub-surface conditions at the site of the proposed Mustang Tractor & Equipment Company facility to be located on Wallisville Road, approximately 500 feet east of its intersection with Wayside Drive, Houston, Texas.

### AUTHORIZATION

The services performed were authorized verbally for Mustang Tractor & Equipment Company by Mr. Ralph Miller, Architect, on January 8, 1974.

### SUBSURFACE EXPLORATION

Exploration at the site consisted of four (4) undisturbed sample core borings drilled to a depth of twenty (20) feet below existing ground surface. Location of the borings is shown on the attached Boring Plan.



The very wet surface conditions throughout the site caused by the recent rains required the use of a dozer to move the truck-mounted drilling rig and water truck to the boring location.

### SUBSURFACE CONDITIONS

Specific type and condition of subsurface soils encountered at the site are shown on the individual Boring Logs. In general, the surface soils at the site are fairly uniform in their mode of occurrence. The surface soils are noted to be plastic dark gray and tan & gray clay which is classified as "CH" type soils which exhibit expansive characteristics when subjected to the normal Gulf Coast seasonal wetting and drying cycles.

Static water table was not found at the site during drilling operations, but is assumed to exist at a depth of approximately thirty (30) feet below existing ground surface.

### DESIGN ANALYSIS

#### Foundation Type and Depth

Based on analysis of the boring logs, laboratory test results and engineering studies, it is our opinion that structural loads for the proposed facilities should be supported on square type spread footings extending to a depth of four (4) feet below existing surface.



It is recommended that at the four (4) foot depth, an allowable bearing capacity of 1,650 pounds per square foot for dead load or 2,500 pounds per square foot for total load, whichever is critical, should be used.

An analysis was made to determine if a higher unit loading could be used at the site. Since the soils encountered to the full depth explored consisted of plastic clays and sandy clays, it is our opinion that a higher unit load would not be available at the site within the depth explored.

#### Floor Slab and Grade Beams

It is recommended that a conventional concrete "slab-on-fill" be used for the interior portion of the structure planned at the site. The material used as select fill beneath the floor slab to reach plan grade should be a non-active sandy clay having a maximum Plasticity Index of 20. Prior to placement of any select fill, all vegetation at the site should be stripped.

#### General Area Paving

The subgrade soils at the site are dark gray clays of moderate Plasticity Index and will exhibit swell characteristics with changes in moisture content under pavements. In order to prevent these changes from occurring and to minimize maintenance, it is suggested that lime stabilization of the subgrade materials be carried out. The following



recommendations are given for paving at the site if lime stabilization is considered.

<u>Type Pavement</u>	<u>Light Traffic</u>	<u>Heavy Traffic</u>
Asphaltic Concrete	1½"	2"
Limestone Base	6"	8"
Lime Stabilized Subgrade	6"	6"

Subgrade preparation should consist of scarifying to a depth of six (6) inches and stabilizing with 22 pounds of hydrated lime per square yard. The soil lime mixture should be compacted to a minimum of 95% of Standard Proctor Density (ASTM D-698). Lime stabilization should conform to Texas Highway Department 1972 Standard Specification Item 260.

The base material should be compacted to 95% of the maximum dry unit weight as obtained in the laboratory by means of ASTM D-1557 procedure.

The surface of the compacted limestone base should then be primed with 0.20 gallons per square yard of MC-1 cut back asphalt. Hot mix asphaltic concrete should be in accordance with Texas Highway Department Item 340 Type D Modified.

*J. Ray Murillo*

J. Ray Murillo, P.E.  
January 28, 1974

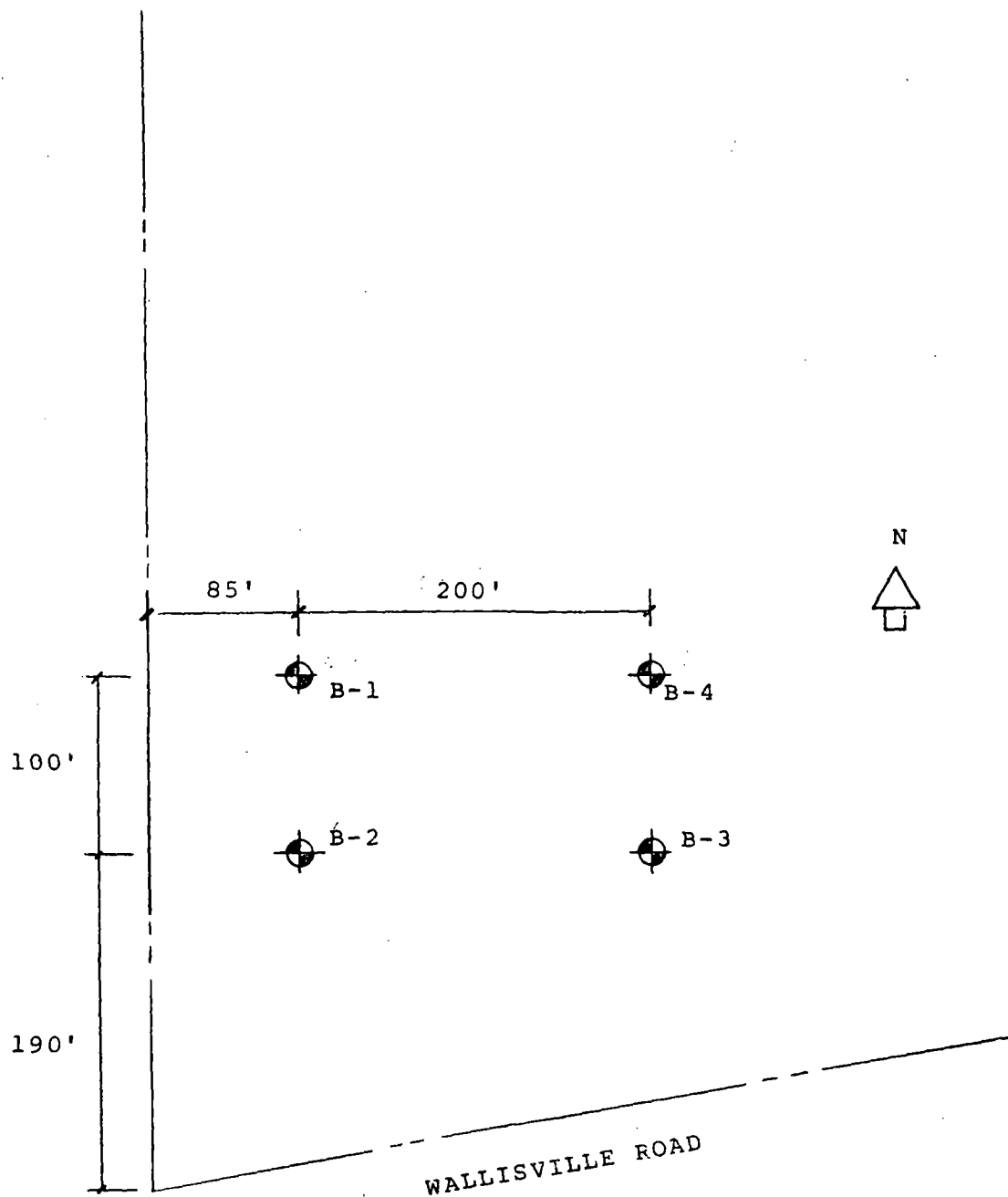
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BORING PLAN

JANUARY 1974



## SUMMARY OF LABORATORY TEST DATA

PROJECT MUSTANG TRACTOR

BORING NUMBER	DEPTH IN FEET	MOISTURE, %	DRY DENSITY, PCF	COMPRESSION, TSF	STRAIN, %	TYPE FAILURE	LAT. PRESSURE	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	SIEVE (No.200)	CONSOLIDATION	SWELL, %
B-1	0-2	11						52	24	28			
	4-6	26	93	0.76									
	6-8	26	96	1.12									
	8-10	25	97	0.76				64	25	39			
B-2	6-8	13	104	0.82									
	8-10	28	95	0.81									
	13-15	16	108	0.26									
B-3	4-6	31	87	0.42				57	19	38			
	8-10	31	94	0.75									
	18-20	23	104	0.79				31	18	13			
B-4	2-4	28	92	0.65				57	25	32			
	8-10	22	98	0.49									
	13-15	29	97	0.70				31	16	15			



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PROJECT MUSTANG TRACTOR

BORING NO B-1

DEPTH IN FEET	SAMPLE TYPE	PENETROMETER READING, SF	BLOWS/ FOOT	N = NO RECOVERY	DATE 1-22-74
				C = UNDISTURBED CORE	LOCATION See Plan
				P = PENETRATION TEST	ELEVATION
				J = JAR	BORING TYPE 3" Core
DESCRIPTION OF STRATUM					
0				Plastic dark gray clay w/organic	
	C	1.5			
	C	1.5			
5	C	1.5		Plastic tan and gray clay w/calcareous nodules	
	C	1.5			
	C	1.5		Stiff tan and gray clay w/calcareous nodules	
10				Stiff red and gray clay w/calcareous nodules	
	C	1.5		Plastic tan and gray sandy clay w/sand seams	
	C	1.5			
20				Bottom @ 20 ft.	



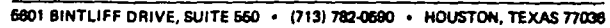
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PROJECT MUSTANG TRACTOR

BORING NO B-2

DEPTH IN FEET	SAMPLE TYPE	PENETROMETER READING, SF	BLOWS/ FOOT	
0				<b>N = NO RECOVERY</b> <b>C = UNDISTURBED CORE</b> <b>P = PENETRATION TEST</b> <b>J = JAR</b>
				<b>DATE</b> <u>1-22-74</u> <b>LOCATION</b> <u>See Plan</u> <b>ELEVATION</b> _____ <b>BORING TYPE</b> <u>3" Core</u>
				<b>DESCRIPTION OF STRATUM</b>
	C	1.5		Plastic dark gray clay w/organic
	C	1.5		
5	C	1.5		Plastic tan and gray clay w/calcareous nodules
	C	1.5		
	C	1.5		
10				Plastic tan and gray sandy clay w/silt seams
15	C	1.5		Plastic tan and gray sandy clay w/calcareous nodules
20	C	1.5		
				Bottom @ 20 ft.
				Note: Advanced boring to 20 feet without using drilling fluid; no water encountered.



PROJECT MUSTANG TRACTOR BORING NO B-3

DEPTH IN FEET	SAMPLE TYPE	PENETROMETER READING, SF	BLOWS/FOOT	N = NO RECOVERY C = UNDISTURBED CORE P = PENETRATION TEST J = JAR	DATE <u>1-22-74</u> LOCATION <u>See Plan</u> ELEVATION _____ BORING TYPE <u>3" Core</u>
0				<b>DESCRIPTION OF STRATUM</b>	
	C	1.5		Plastic dark gray clay w/organic	
	C	1.5			
5	C	1.5		Plastic tan and gray clay w/calcareous nodules	
	C	1.5			
10	C	1.5			
				Plastic tan and gray sandy clay w/silt seams	
	C	1.5			
15				Plastic tan and gray sandy clay w/calcareous nodules	
20	C	1.5			
				Bottom @ 20 ft.	
				Note: Advanced boring to 20 feet without using drilling fluid; no water encountered.	



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PROJECT MUSTANG TRACTOR BORING NO B-4

DEPTH IN FEET	SAMPLE TYPE	PENETROMETER READING, SF	BLOWS/FOOT	
0				<b>DESCRIPTION OF STRATUM</b>
	C	1.5		Plastic dark gray clay w/organic
	C	1.5		
5	C	1.5		Plastic tan and gray clay w/calcareous nodules
	C	1.5		
10	C	1.5		Plastic tan and gray sandy clay w/sand seams
15	C	1.5		Plastic tan and gray sandy clay w/calcareous nodules
20	C	15.		
				Bottom @ 20 ft.
				Note: Advanced boring to 20 feet without using drilling fluid; no water encountered.